

WHAT IS CLAIMED:

1. A method of inhibiting postharvest disease or desiccation in a fruit or vegetable, said method comprising:

5 treating a fruit or vegetable with a hypersensitive response elicitor protein or polypeptide under conditions effective to inhibit postharvest disease or desiccation.

10 2. The method according to claim 1, wherein hypersensitive response elicitor protein or polypeptide is in isolated form.

3. The method according to claim 2, wherein said treating is carried out prior to harvest of the fruit or vegetable.

15 4. The method according to claim 3, wherein said treating is carried out by spraying the fruit or vegetable with the hypersensitive response elicitor protein or polypeptide.

20 5. The method according to claim 4, wherein the hypersensitive response elicitor protein or polypeptide is in liquid or powder form.

6. The method according to claim 1, wherein said treating is carried out after harvest of the fruit or vegetable.

25 7. The method according to claim 6, wherein said treating is carried out by spraying the fruit or vegetable with the hypersensitive response elicitor protein or polypeptide.

30 8. The method according to claim 7, wherein the hypersensitive response elicitor protein or polypeptide is in liquid or powder form.

9. The method according to claim 6, wherein said treating is carried out by immersing the fruit or vegetable in the hypersensitive response elicitor protein or polypeptide.

5 10. The method according to claim 1, wherein the hypersensitive response elicitor protein or polypeptide is derived from a species of pathogen selected from the group consisting of *Erwinia*, *Xanthomonas*, *Pseudomonas*, *Phytophthora*, and *Clavibacter*.

10 11. The method according to claim 10, wherein the hypersensitive response elicitor protein or polypeptide is derived from *Erwinia amylovora*.

15 12. The method according to claim 10, wherein the hypersensitive response elicitor protein or polypeptide is derived from *Erwinia carotovora*.

13. The method according to claim 10, wherein the hypersensitive response elicitor protein or polypeptide is derived from *Erwinia stewartii*.

20 14. The method according to claim 10, wherein the hypersensitive response elicitor protein or polypeptide is derived from *Erwinia chrysanthemi*.

15. The method according to claim 10, wherein the hypersensitive response elicitor protein or polypeptide is derived from *Pseudomonas syringae*.

25 16. The method according to claim 10, wherein the hypersensitive response elicitor protein or polypeptide is derived from *Pseudomonas solanacearum*.

30 17. The method according to claim 1, wherein the hypersensitive response elicitor protein or polypeptide is derived from a species of *Phytophthora*.

18. The method according to claim 1, wherein said treating inhibits desiccation in a fruit or vegetable.

19. The method according to claim 1, wherein said treating inhibits a postharvest disease in a fruit or vegetable.

20. The method according to claim 19, wherein the postharvest disease is caused by *Penicillium*, *Botrytis*, *Phytophthora*, or *Erwinia*.

21. A method of inhibiting postharvest disease or desiccation in a fruit or vegetable, said method comprising:
providing a transgenic plant or plant seed transformed with a DNA molecule encoding a hypersensitive response elicitor polypeptide or protein and growing the transgenic plant or transgenic plant produced from the transgenic plant seed under conditions effective to inhibit a postharvest disease or desiccation in a fruit or vegetable harvested from the transgenic plant.

22. The method according to claim 21, wherein a transgenic plant is provided.

23. The method according to claim 21, wherein a transgenic plant seed is provided.

24. The method according to claim 21, wherein the transgenic plant is a dicot or a monocot.

25. The method according to claim 21, further comprising:
applying the hypersensitive response elicitor polypeptide or protein to the fruit or vegetable to inhibit postharvest disease or desiccation.

26. The method according to claim 25, wherein said applying is carried out prior to harvest of the fruit or vegetable.

27. The method according to claim 25, wherein said applying is carried out after harvest of the fruit or vegetable.

28. The method according to claim 21, wherein the hypersensitive response elicitor protein or polypeptide is derived from a species of pathogen selected from the group consisting of *Erwinia*, *Xanthomonas*, *Pseudomonas*, *Phytophthora*, and *Clavibacter*.

29. The method according to claim 28, wherein the hypersensitive response elicitor protein or polypeptide is derived from *Erwinia amylovora*.

30. The method according to claim 28, wherein the hypersensitive response elicitor protein or polypeptide is derived from *Erwinia carotovora*.

31. The method according to claim 28, wherein the hypersensitive response elicitor protein or polypeptide is derived from *Erwinia stewartii*.

32. The method according to claim 28, wherein the hypersensitive response elicitor protein or polypeptide is derived from *Erwinia chrysanthemi*.

33. The method according to claim 28, wherein the hypersensitive response elicitor protein or polypeptide is derived from *Pseudomonas syringae*.

34. The method according to claim 28, wherein the hypersensitive response elicitor protein or polypeptide is derived from *Pseudomonas solanacearum*.

35. The method according to claim 28, wherein the hypersensitive response elicitor protein or polypeptide is derived from a species of *Phytophthora*.

36. The method according to claim 21, wherein the postharvest disease is caused by *Penicillium*, *Botrytis*, *Phytophthora*, or *Erwinia*.

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37. A DNA construct comprising:
a DNA molecule encoding a hypersensitive response elicitor protein or polypeptide;
a plant-expressible promoter operably coupled 5' to the DNA molecule, the promoter being effective to transcribe the DNA molecule in fruit or vegetable tissue; and
a 3' regulatory region operably coupled to the DNA molecule, wherein expression of the DNA molecule in fruit or vegetable tissue imparts to a fruit or vegetable resistance against postharvest disease or desiccation.

38. An expression system comprising a vector into which is inserted a heterologous DNA construct according to claim 37.

39. A host cell comprising a heterologous DNA construct according to claim 37.

40. The host cell according to claim 39, wherein the host cell is a plant cell or a bacteria cell.

41. The host cell according to claim 40, wherein the bacteria cell is an *Agrobacterium* cell.

42. A transgenic plant comprising a heterologous DNA construct according to claim 37.

43. A method of enhancing the longevity of fruit or vegetable ripeness comprising:
treating a fruit or vegetable with a hypersensitive response elicitor protein or polypeptide under conditions effective to enhance the longevity of fruit or vegetable ripeness.

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44. The method according to claim 43, wherein hypersensitive response elicitor protein or polypeptide is in isolated form.

5 45. The method according to claim 43, wherein said treating is carried out prior to harvest of the fruit or vegetable.

46. The method according to claim 43, wherein said treating is carried out after harvest of the fruit or vegetable.

10 47. A method of enhancing the longevity of fruit or vegetable ripeness comprising:
providing a transgenic plant or plant seed transformed with a DNA molecule encoding a hypersensitive response elicitor polypeptide or protein and
15 growing the transgenic plant or transgenic plant produced from the transgenic plant seed under conditions effective to enhance the longevity of fruit or vegetable ripeness in a fruit or vegetable harvested from the transgenic plant.

20 48. The method according to claim 47, further comprising:
applying the hypersensitive response elicitor polypeptide or protein to the fruit or vegetable to enhance the longevity of fruit or vegetable ripeness.

49. The method according to claim 48, wherein said applying is carried out prior to harvest of the fruit or vegetable.

25 50. The method according to claim 48, wherein said applying is carried out after harvest of the fruit or vegetable.

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